TEST REPORT

Applicant Company Name：Chengdu Ebyte Electronic Technology Co., Ltd.

Applicant Company Address：Innovation Center D347, 4# XI-XIN road, High-tech district(west), Chengdu, Sichuan, China

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample Name	:	Wireless transceiver module
Model No.	:	E01-ML01S,E01-ML01SP2,E01-ML01SP4, E01-ML01DP5,E01-ML01D,E01-ML01DP4
Trademark	:	EBYTE
Sample Receiving Date	:	May.08,2018
Testing Period	:	From May.08,2018 to May.25,2018
Results	:	Please refer to next page(s).

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Summary of Test Results:

TEST REQUEST	**CONCLUSION**
A EU RoHS Directive 2011/65/EU and its amendment directives 2015/863/EU	**Pass**

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Signed for and on behalf of
DTI

Approved by: _____
lab manager

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Results:

1、EU RoHS Directive 2011/65/EU and its amendment directives on XRF

Test method: With reference to IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Seq. No.	Tested Part(s)	Results				
		Pb	Cd	Hg	Cr	Br
1	PCB Piece	BL	BL	BL	BL	X
2	Soldering Tin	X	BL	BL	X	BL
3	Silvery Metal Cover	BL	BL	BL	X	BL
4	Black Ceramic Body（24010）	BL	BL	BL	BL	BL
5	Black Ceramic Body（24001K）	BL	BL	BL	BL	BL
6	Black Plastic Body（Connect Slot 1）	BL	BL	BL	BL	X
7	Metal Needles（Connect Slot 1）	BL	BL	BL	X	BL
8	Yellow Plastic Cover（Connect Slot 2）	BL	BL	BL	BL	BL
9	Golden Metal Frame（Connect Slot 2）	BL	BL	BL	X	BL
10	White Plastic（Connect Slot 2）	BL	BL	BL	BL	BL

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Remark:

(1) Results were obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(Ⅵ)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013.

Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	BL≤70-3σ< X <130+3σ≤OL	BL≤70-3σ< X <130+3σ≤OL	BL≤50-3σ< X <150+3σ≤OL
Pb	mg/kg	BL≤700-3σ< X <1300+3σ≤OL	BL≤700-3σ< X <1300+3σ≤ OL	BL≤500-3σ< X <1500+3σ≤OL
Hg	mg/kg	BL≤700-3σ< X <1300+3σ≤OL	BL≤700-3σ< X <1300+3σ≤OL	BL≤500-3σ< X <1500+3σ≤OL
Cr	mg/kg	BL≤700-3σ< X	BL≤700-3σ< X	BL≤500-3σ< X
Br	mg/kg	BL≤300-3σ< X	--	BL≤250-3σ< X

Note:

BL = Below Limit

OL = Over Limit

X = Inconclusive

(2) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

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(3) The maximum permissible limit is quoted from the document 2011/65/EU and its amendment directives 2015/863/EU:

RoHS Restricted Substances	**Maximum Concentration Value (mg/kg) (by weight in homogenous materials)**
Cadmium (Cd)	≤100
Lead (Pb)	≤1000
Mercury (Hg)	≤1000
Hexavalent Chromium (Cr(Ⅵ))	≤1000
Polybrominated biphenyls (PBBs)	≤1000
Polybrominate ddiphenylethers (PBDEs)	≤1000

(4) Disclaimers:

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

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2、The Test Results of Chemical Method:

Test method:

Lead, Cadmium, Mercury Content:
With reference to IEC 62321-4:2013 and IEC62321-5:2013, by acid digestion and analysis was performed by Inductively Coupled Plasma- Atomic Emission Spectrophotometer (ICP-AES)

Hexavalent Chromium Content (For metal material):
With reference to IEC 62321-7-1:2015, by boiling-water-extraction and analysis was performed by UV-visible spectrophotometer (UV-Vis)

Hexavalent Chromium Content (For non-metal material):
With reference to IEC 62321-7-2:2017, by alkaline digestion and analysis was performed by UV-visible spectrophotometer (UV-Vis)

PBBs & PBDEs Content:
With reference to IEC 62321-6:2015, by solvent extraction and analysis was performed by gas chromatographic/ mass spectrometer (GC-MS)

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1) The test results of Cr (VI)

Item	Unit	MDL	Results				Limit
			2	3	7	9	
Hexavalent Chromium (Cr (VI)) (Metal material)	$\mu g/cm^2$	0.05	Negative	Negative	Negative	Negative	#
Conclusion	/	/	**Pass**	**Pass**	**Pass**	**Pass**	/

Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- Negative= Sample Cr(VI) concentration is less than 0.10 $\mu g/cm^2$
  Positive = Sample Cr(VI) concentration is greater than 0.13 $\mu g/cm^2$
- # =
  Positive indicates the presence of Cr(VI) on the tested areas and the test results are considered to be incompatible with Directive 2011/65/EU (RoHS 2.0) requirement.

  Negative indicates the absence of Cr(VI) on the tested areas and the test results are considered to be consistent with Directive 2011/65/EU (RoHS 2.0) requirement.
- mg/kg = ppm

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2) The test results of Pb

Item	Unit	MDL	Results	Limit
			2	
Lead(Pb)	mg/kg	2	153	≤1000
Conclusion	/	/	**Pass**	/

Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- mg/kg = ppm

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3) The test results of PBBs & PBDEs

Item	Unit	MDL	Results		Limit
			1	6	
Polybrominated Biphenyls (PBBs)					
Monobromobiphenyl	mg/kg	5	N.D.	N.D.	/
Dibromobiphenyl	mg/kg	5	N.D.	N.D.	/
Tribromobiphenyl	mg/kg	5	N.D.	N.D.	/
Tetrabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Pentabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Hexabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Heptabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Octabromobiphenyl	mg/kg	5	N.D.	N.D.	/
Nonabromodiphenyl	mg/kg	5	N.D.	N.D.	/
Decabromodiphenyl	mg/kg	5	N.D.	N.D.	/
Total content	mg/kg	/	N.D.	N.D.	≤1000
Polybrominated Diphenylethers (PBDEs)(Mon-Deca)					
Monobromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Dibromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Tribromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Tetrabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Pentabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Hexabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Heptabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Octabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Nonabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Decabromodiphenyl ether	mg/kg	5	N.D.	N.D.	/
Total content	mg/kg	/	N.D.	N.D.	≤1000
Conclusion	/	/	**Pass**	**Pass**	/

Note:

- N.D. = Not Detected or less than MDL
- mg/kg = ppm
- MDL = Method Detection Limit
- Test Flow chart appendix is included
- Photo appendix is included

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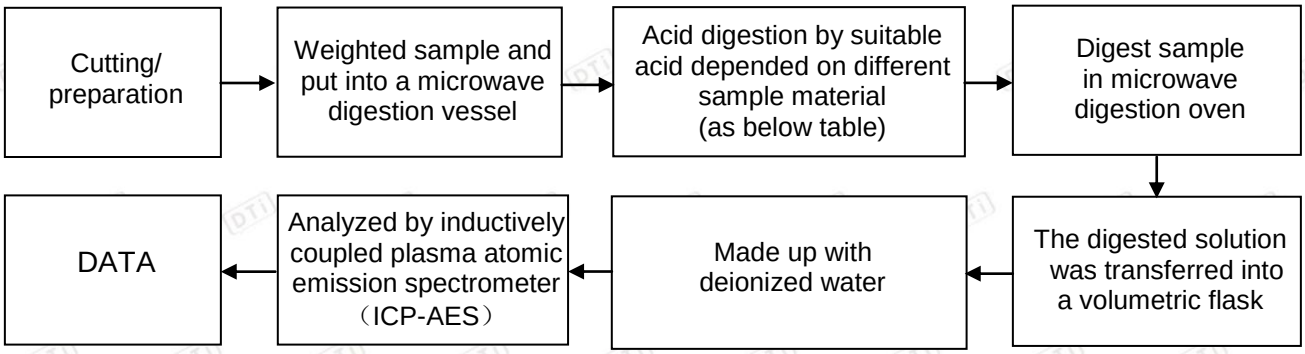
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Appendix Ⅰ

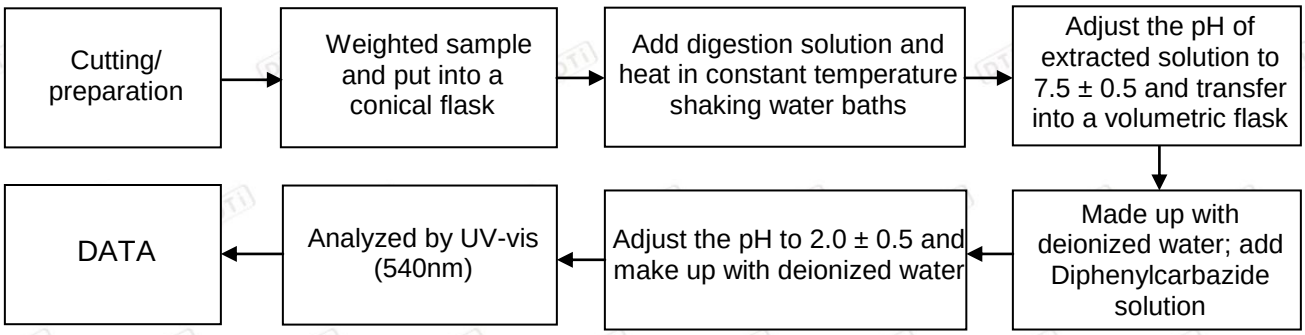
Test Flow chart

1. Test Flowchart for Cd / Pb /Hg content

These samples were dissolved totally by pre-conditioning method according to below flow chart.



2. Test Flowchart for Cr^{6+} content



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3. Test Flowchart for PBBs & PBDEs content

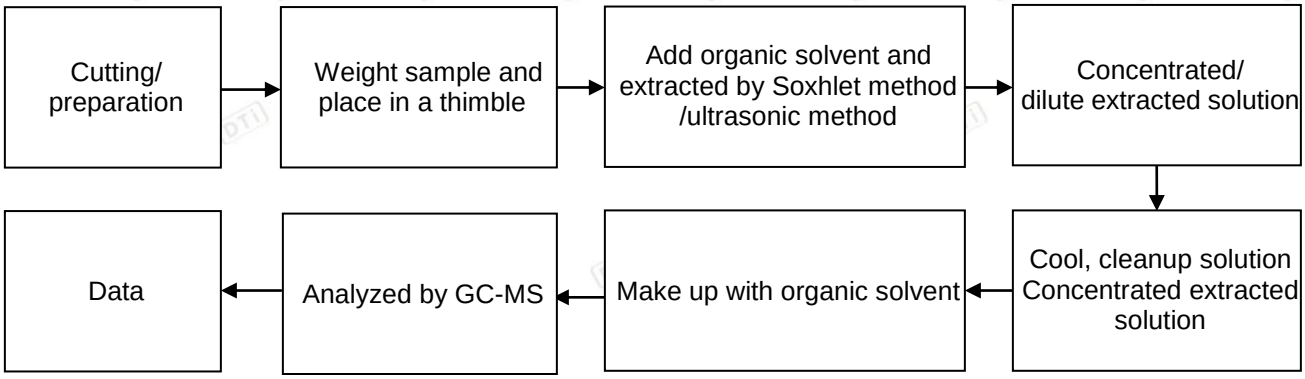


Table:

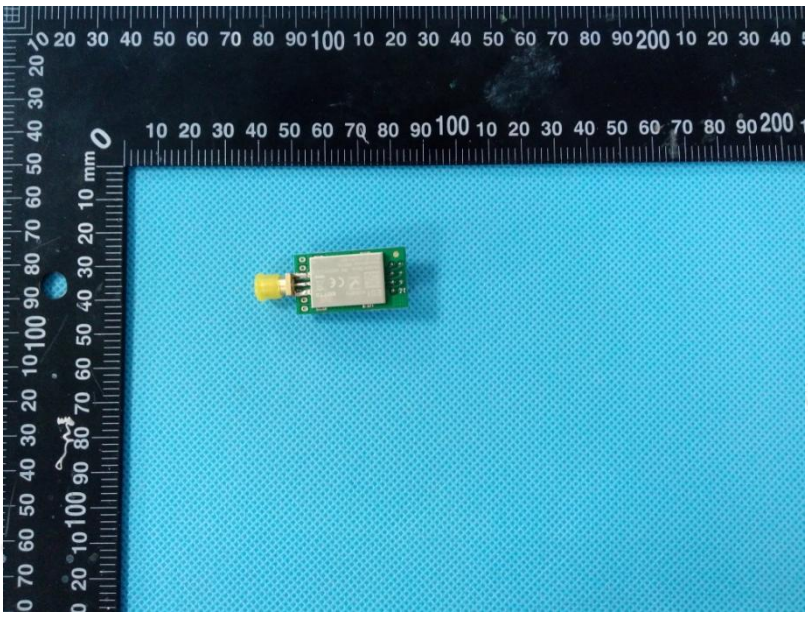
Sample material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Any acid to total digestion

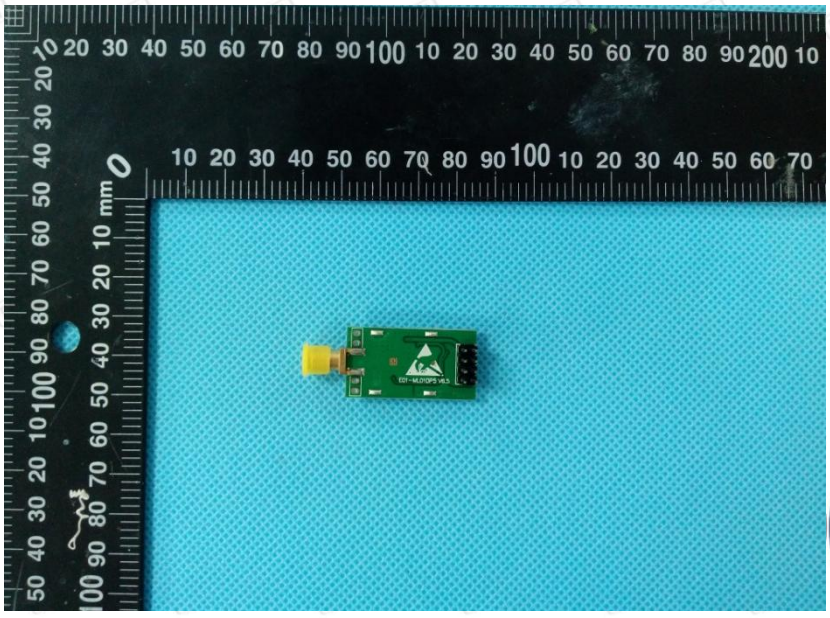
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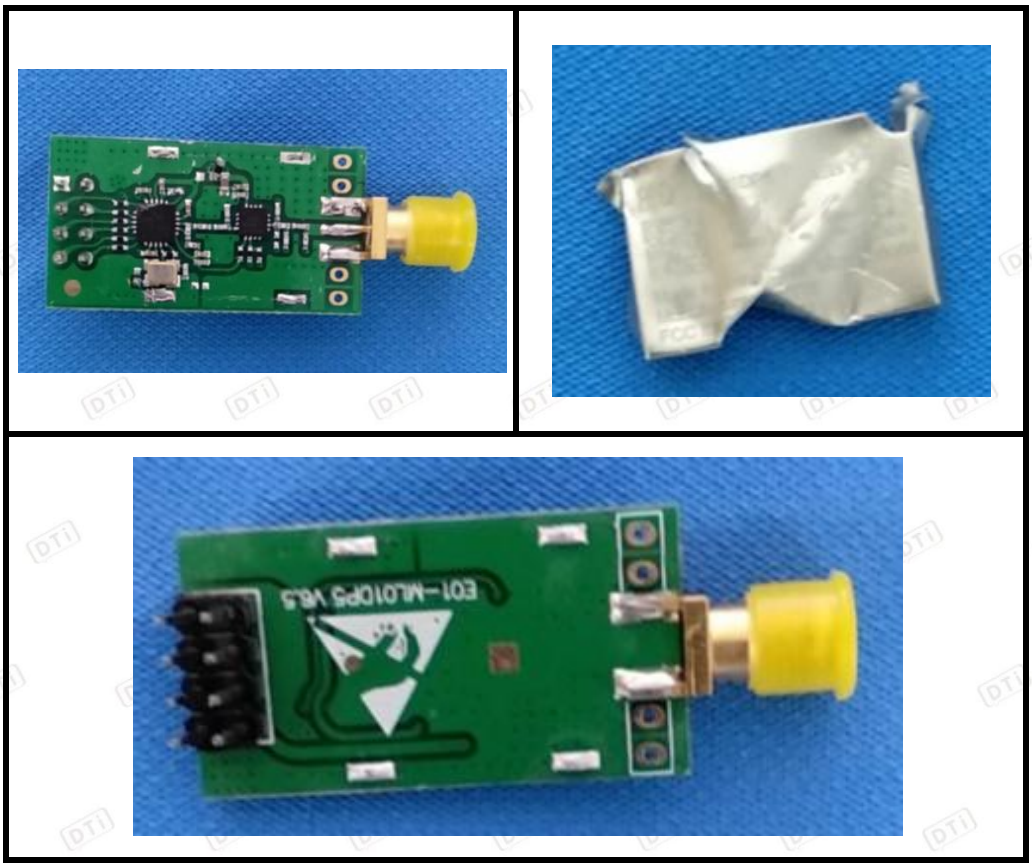
Appendix Ⅱ

Photograph of Sample





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DTI authenticate the photo on original report only

*** End of Report ***

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